

General

Title

End stage renal disease (ESRD): percentage of patient months for patients on maintenance hemodialysis during the last HD treatment of month using an autogenous AV fistula.

Source(s)

Centers for Medicare & Medicaid Services (CMS). Measure information form: maximizing placement of arterial venous fistula (AVF). Baltimore (MD): Centers for Medicare & Medicaid Services (CMS); 2015 Sep 25. 5 p.

Centers for Medicare & Medicaid Services (CMS). Measure justification form: maximizing placement of arterial venous fistula (AVF). Baltimore (MD): Centers for Medicare & Medicaid Services (CMS); 2015 Sep 25. 56 p.

Measure Domain

Primary Measure Domain

Clinical Quality Measures: Process

Secondary Measure Domain

Does not apply to this measure

Brief Abstract

Description

This measure is used to assess the percentage of patient months for patients on maintenance hemodialysis during the last hemodialysis (HD) treatment of the month using an autogenous arteriovenous (AV) fistula.

Rationale

The National Kidney Foundation (NKF) Kidney Disease Outcomes Quality Initiative (KDOQI) guidelines (2006) state the following: 1) arteriovenous (AV) fistulas have the lowest rate of thrombosis and require the fewest interventions, 2) cost of AV fistula use and maintenance is the lowest, 3) fistulas have the

lowest rates of infection, and 4) fistulas are associated with the highest survival and lowest hospitalization rates. Indeed, a number of epidemiologic studies consistently demonstrate the reduced morbidity and mortality associated with greater use of AV fistulas for vascular access in maintenance hemodialysis.

Evidence for Rationale

Centers for Medicare & Medicaid Services (CMS). Measure justification form: maximizing placement of arterial venous fistula (AVF). Baltimore (MD): Centers for Medicare & Medicaid Services (CMS); 2015 Sep 25. 56 p.

National Kidney Foundation. KDOQI clinical practice guidelines and clinical practice recommendations for 2006 updates: vascular access. New York (NY): National Kidney Foundation; 2006.

Primary Health Components

End stage renal disease (ERSD); hemodialysis; autogenous arteriovenous (AV) fistula

Denominator Description

For both CROWNWeb and Claims data, the denominator will include all hemodialysis patients who are at least 18 years old and have had end-stage renal disease (ESRD) for greater than 90 days as of the first day of the reporting month.

See the related "Denominator Inclusions/Exclusions" field.

Numerator Description

Number of patient months in the denominator who were using an autogenous arteriovenous (AV) fistula at the last hemodialysis (HD) treatment of month (see the related "Numerator Inclusions/Exclusions" field)

Evidence Supporting the Measure

Type of Evidence Supporting the Criterion of Quality for the Measure

A clinical practice guideline or other peer-reviewed synthesis of the clinical research evidence

A systematic review of the clinical research literature (e.g., Cochrane Review)

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Additional Information Supporting Need for the Measure

Unspecified

Extent of Measure Testing

Reliability Testing

Method of Reliability Testing

The developer used January 2013 – December 2013 CROWNWeb data to calculate facility level monthly and annual performance scores. The developer assessed reliability by calculating inter-unit reliability (IUR) for each reporting month and the overall 12 months. The monthly based measure was a simple average across individuals in the facility. The National Quality Forum (NQF)-recommended approach for determining measure reliability is a one-way analysis of variance (ANOVA), in which the between and within facility variation in the measure is determined. The IUR measures the proportion of the measure variability that is attributable to the between-facility variance. The yearly based measure, however, is not a simple average and we instead estimate the IUR using a bootstrap approach, which uses a resampling scheme to estimate the within facility variation that cannot be directly estimated by ANOVA. The developer notes that the method for calculating the IUR was developed for measures that are approximately normally distributed across facilities. Since this measure is not normally distributed, the IUR value should be interpreted with some caution.

The developer also did a comparison of the data elements used to calculate this measure in order to assess comparability of the calculations using two Medicare data sources. The measure was calculated using Medicare claims and using CROWNWeb clinical data.

Statistical Results from Reliability Testing

For reliability the developer calculated the monthly and annual IUR across the 12 reporting months. As explained above, the method for calculating the IUR was developed for measures that are approximately normally distributed across facilities. IUR=0.75637, which is high and suggests 76% of variation in the measure is attributed to between facility variation.

Interpretation

The IUR suggest this measure is reliable. However, since the distribution of performance scores is skewed, the IUR value should be interpreted with some caution.

Validity Testing

Method of Validity Testing

Validity was assessed using Poisson regression models to measure the association between facility level quintiles of performance scores and the 2013 Standardized Mortality Ratio (SMR) (NQF 0369) and 2013 Standardized Hospitalization Ratio (SHR) (NQF 1463), respectively, both NQF-endorsed measures. Facility-level performance scores were divided into quintiles and the relative risk (RR) of mortality was calculated for each quintile. The fifth quintile was used as the reference group. Thus, a RR greater than 1.0 for the lower performance score quintiles would indicate a higher relative risk of mortality or hospitalization.

Statistical Results from Validity Testing

Quintiles of the performance scores were defined as follows:

- Q1: 0.0% to less than 58.4%
- Q2: 58.4% to less than 64.9%
- Q3: 64.9 to less than 70.4%
- Q4: 70.4% to less than 76.6%
- Q5: 76.6% to less than or equal to 100.0%

Results from the Poisson model indicated the percent of patients dialyzing with an arteriovenous (AV) fistula was significantly associated with both SMR (p less than 0.0001) and SHR (p less than 0.0001). For SMR, the relative risk of mortality was highest in the lowest performance measure quintile (RR=1.16; 95% confidence interval [CI]: 1.14, 1.19). For quintile 2, RR=1.08 (95% CI:1.06, 1.11), quintile 3,

RR=1.08 (95% CI:1.05 to 1.11) and was 1.06 for quintile 4 (95% CI:1.03, 1.08). Similarly for SHR, the relative risk of hospitalization was highest in the lowest performance measure quintile (RR=1.22; 95% CI: 1.22, 1.22). For quintile 2, RR=1.14 (95% CI:1.13, 1.14), quintile 3, RR=1.13 (95% CI: 1.12, 1.13) and was 1.08 for quintile 4 (95% CI:1.08, 1.08).

Interpretation

These results suggest the predictive relationship of higher AV fistula use with lower mortality and hospitalization, as measured by the respective standardized mortality and hospitalization rates, compared to facilities with lower AV fistula use.

Refer to the original measure documentation for additional information.

Evidence for Extent of Measure Testing

Centers for Medicare & Medicaid Services (CMS). Measure justification form: maximizing placement of arterial venous fistula (AVF). Baltimore (MD): Centers for Medicare & Medicaid Services (CMS); 2015 Sep 25. 56 p.

State of Use of the Measure

State of Use

Current routine use

Current Use

not defined yet

Application of the Measure in its Current Use

Measurement Setting

Ambulatory Procedure/Imaging Center

Hospital Outpatient

Managed Care Plans

Professionals Involved in Delivery of Health Services

not defined yet

Least Aggregated Level of Services Delivery Addressed

Single Health Care Delivery or Public Health Organizations

Statement of Acceptable Minimum Sample Size

Does not apply to this measure

Target Population Age

Age greater than or equal to 18 years

Target Population Gender

Either male or female

National Strategy for Quality Improvement in Health Care

National Quality Strategy Aim

Better Care

National Quality Strategy Priority

Prevention and Treatment of Leading Causes of Mortality

Institute of Medicine (IOM) National Health Care Quality Report Categories

IOM Care Need

Living with Illness

IOM Domain

Effectiveness

Data Collection for the Measure

Case Finding Period

The measurement period

Denominator Sampling Frame

Enrollees or beneficiaries

Denominator (Index) Event or Characteristic

Clinical Condition

Patient/Individual (Consumer) Characteristic

Therapeutic Intervention

Denominator Time Window

not defined yet

Denominator Inclusions/Exclusions

Inclusions

For both CROWNWeb and Claims data, the denominator will include all hemodialysis patients who are at least 18 years old and have had end-stage renal disease (ESRD) for greater than 90 days as of the first day of the reporting month

Note: Refer to the original measure documentation for additional denominator details and calculation algorithm/measure logic.

Exclusions

Exclusions that are implicit in the denominator definition include:

- Pediatric patients (less than 18 years old)

- Acute hemodialysis patients (hemodialysis patients who have had ESRD for less than 91 days)

Exclusions/Exceptions

not defined yet

Numerator Inclusions/Exclusions

Inclusions

Number of patient months in the denominator who were using an autogenous arteriovenous (AV) fistula at the last hemodialysis (HD) treatment of month

Note: The numerator will be determined by counting the patient months in the denominator who were using an AV fistula as the means of access.

Exclusions

Unspecified

Numerator Search Strategy

Fixed time period or point in time

Data Source

Administrative clinical data

Registry data

Type of Health State

Does not apply to this measure

Instruments Used and/or Associated with the Measure

Unspecified

Computation of the Measure

Measure Specifies Disaggregation

Does not apply to this measure

Scoring

Rate/Proportion

Interpretation of Score

Desired value is a higher score

Allowance for Patient or Population Factors

not defined yet

Standard of Comparison

not defined yet

Identifying Information

Original Title

Maximizing placement of arterial venous fistula (AVF).

Measure Collection Name

End Stage Renal Disease (ESRD) Quality Measures

Submitter

Centers for Medicare & Medicaid Services - Federal Government Agency [U.S.]

Developer

Centers for Medicare & Medicaid Services - Federal Government Agency [U.S.]

Funding Source(s)

Composition of the Group that Developed the Measure

The University of Michigan Kidney and Epidemiology Cost Center (UM-KECC), develops, maintains, and updates the End Stage Renal Disease (ESRD) Quality Measures for the Centers for Medicare and Medicaid Services (CMS), under the Quality Measure Development and Maintenance contract with CMS. In addition, UM-KECC works with CMS's Measures Management System (MMS) in the development, evaluation, and reporting of the current ESRD Quality Measures.

Financial Disclosures/Other Potential Conflicts of Interest

Unspecified

Endorser

National Quality Forum - None

NQF Number

not defined yet

Date of Endorsement

2015 Oct 1

Measure Initiative(s)

Dialysis Facility Compare (DFC)

Adaptation

This measure was not adapted from another source.

Date of Most Current Version in NQMC

2015 Sep

Measure Maintenance

Annually

Date of Next Anticipated Revision

Unspecified

Measure Status

Please note: This measure has been updated. The National Quality Measures Clearinghouse is working to update this summary.

Measure Availability

Source available from the [Dialysis Data Web site](#) .

For more information, refer to the [Dialysis Data Web site](#) or contact Casey Parrotte at the Kidney Epidemiology and Cost Center, The University of Michigan, 1415 Washington Heights, Suite 3645 SPHI, Ann Arbor, MI 48109-2029; Phone: 734-763-6611; Fax: 734-763-4004; Email: parrotte@med.umich.edu.

NQMC Status

This NQMC summary was completed by ECRI Institute on May 14, 2010. The information was verified by the measure developer on June 14, 2010. This NQMC summary was retrofitted into the new template on June 27, 2011.

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This NQMC summary was updated again by ECRI Institute on July 14, 2016.

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Production

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Disclaimer

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